朝比奈泰彦*: 地衣類雜記 (§135-136)

Yasuhiko ASAHINA*: Lichenologische Notizen (§135-136)

§135. On the Occurrence of Cladonia submitis Evans in Japan.

In 1942 Asahina and Sasaki[1] isolated from *Cladonia mitis* specimens collected on Mt. Hakusan, Hondo, rangiformic acid along with d-usnic acid. The rangiformic acid yields on recrystallization from the G. E. solution under cover glass characteristic groups of trichites (Fig. 1), which may be utilized for the detection of the same acid. Evans,[2] who had studied the microchemical features of the *Cladonia* specimens distinguished the crystal types originated by the same procedure as A, B, C and D, of which D is identified with rangiformic acid. Among *Cladonia mitis* specimens (P-) he found a group which produce D type, sometimes may contain A or B but never C. Another Group which exhibits C-type crystals (Fig. 2) contains neither B nor D at the same time. Evans segregated the latter group from *Cladonia mitis* and called it *Cladonia submitis* Evans. In 1951 the writer and Sakurai[3] extracted a substance, pseudonorrangiformic acid $C_{20}H_{36}O_6$ (m.p. 189°) from *Cladonia submitis* kindly submitted by Dr. Evans and recognized the identity of the crystal C of Evans with the pseudonorrangiformic acid. At the same time it was revealed that some Japanese specimens of *Cladonia mitis* contain pseudonorrangiformic acid instead of rangiformic acid. On account of scarcity of specimens

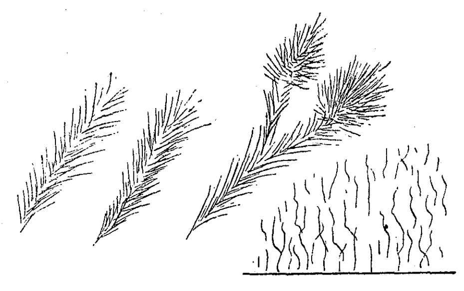


Fig. 1. Rangiformic acid recrystallized for G. E. solution on a slide glass. Magnified.

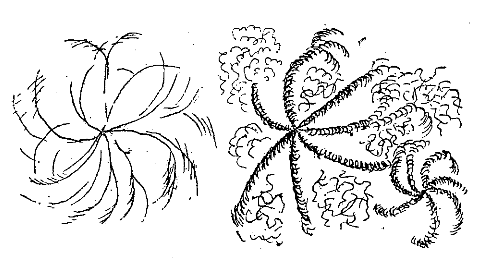


Fig. 2. Pseudonorrangiformic acid recrystallized from G. E. solution on a slide glass. Magnified.

* 資源科学研究所. Research Institute for Natural Resources, Shinjuku, Tokyo.

1) 日化: Bull. Chem. Soc. Japan, **17**: 495 (1942).

2) Rhodora, **45**: 417-438. (1943).

3) Journ. Pharmaceut. Soc. Japan, **71**: 1166 (1951).

the distribution area of both species in Japan is not precisely demarcatable. So far as I can determine from the materials placed at my disposal *Cladonia submitis* predominates in northern Japan including Hokkaido, Kuriles and Saghalien, while *Cladonia mitis* containing rangiformic acid is restricted on localities lying within 36° and 40° N. Lat.

Cladonia mitis Sandst.

Localities of specimens containing the rangiformic acid: Mt. Hakusan (白山), Prov. Kaga; Mt. Norikura (乗鞍岳), Mt. Shirouma (白馬岳), Prov. Shinano; Magawa (真川) Prov. Ettyu; Matsukawa-Ura (松川浦), Prov. Iwaki; Mt. Ganjiu (岩手山), Prov. Rikuchu.

Localities of specimens containing neither rangiformic acid nor pseudonorrangiformic acid: Hokkaido-Nibuse (仁伏), Prov. Kushiro; Mt. Apoi (アポイ岳), Prov. Hidaka; Shizukari (シヅカリ), Prov. Iburi; Hondo- Mt. Kimpoku (金北山), Ins. Sado; Oze-Lake (尾瀬沼), Prov. Iwashiro; Mt. Bandai (磐梯山), Prov. Iwashiro; Mt. Shirane (Nikko) (白根山-日光), Prov. Kozuke; Mt. Tanigawa (谷川岳), Prov. Kozuke: Mt. Shirouma (白馬天狗原), Mt. Iwasuge (岩菅山), Mt. Asama (浅間鬼押出), Mt. Ontake (御嶽山), Prov. Shinano; Mt. Yatsugatake (八ケ岳), Lake districts of Mt. Fuji (富士五湖), Prov. Kai; Mt. Rokko (六甲山), Prov. Settu; Shikoku- Mt. Kenzan (剣山), Prov. Awa.

Cladonia submitis Evans.

Localities of specimens containing pseudonorrangiformic acid: Paramushir (幌筵), Kuriles; Sakaehama (栄浜), Saghalien; Hokkaido- Mt. Daisetsu (大雪山) and Mt. Ashibetsu (芦別岳), Hokkaido- Mt. Hakkoda (八甲田), Prov. Mutsu; Mt. Ganjiu (岩手山), Prov. Rikuchiu; Mt. Chokai (鳥海山) & Mt. Gassan (月山), Prov. Uzen; Mt. Tateyama, (立山), Prov. Ettyu; Mt. Hiuchi (燧岳), Prov. Iwashiro, Mt. Shibutu (至仏岳), Prov. Kozuke.

1942 年に筆者は佐々木豊作氏[1]と共に加賀白山産の *Cladonia mitis* から抽出した脂肪系の酸をランギフォルム酸と決定し，其の G. E. 液からスライドグラス上に結晶させた形体と該地衣体からのアセトンエキスをミクロ法によつて G. E. 液から結晶させたものとが一致したので，此結晶を目標とし任意の *Cl. mitis* 標本中にランギフオルム酸の有無を判定することができた。その文献[4]では其の Fig. 7 の a 及の b 如き形のもの即本報告の Fig. 1 の如きものがランギフオルム酸の常型と考へたが又文献の Fig. 7 の c の如き形を呈するものもランギフルム酸の畸化された形と考へて之を生ずる地衣体

4) 植研: Journ. Jap. Bot., **17**: 624-626 (1941).

もランギフオルム酸含有として算入した。所が 1943 年に Evans[2] 氏は Cladina 亜属の各種の地衣からミクロ法で A, B, C, D の四種の結晶を分別し殊に *Cl. mitis* と従来称せられて居る PD- の標本は D を主として生じ之に A 又は B を組合せたものを生ずる一群と，C 結晶を主として発生し B や D とは決して共存しない一群の存在を確認し，此の C 結晶を生ずるものを *mitis* から分離して *Cl. submitis* なる新種を作た。次いで 1951 年に筆者は桜井欽夫氏[3] と共に Evans 博士から寄贈された *Cl. submitis* の標本 102 gr. を化学的に所理して α-ウスニン酸の融点 189° の無色結晶体 $C_{20}H_{36}O_6$ を分離し，後者をプソイドノルランギフオルム酸と命名し且つ其ミクロ法による G. E. 液からの結晶形が Evans 氏の C 結晶又筆者の c 結晶と同一であると認め，筆者が嘗て *Cl. mitis* 中に包含させた c 結晶を生ずる標本は *Cl. submitis* Evans 其物であつた事が判明した。

以上の結果 *Cl. submitis* Evans は日本にも産することが証明されたが其分布は主として中部日本以北，更に小分すれば岩代の燧岳，及び上野の至仏岳と越中立山を連ぬる線以北で北海道，樺太，千島に及で居る。之に対してランギフオルム酸を含む *Cl. mitis* は筆者の乾園中には加賀白山室堂附近の品が主で他は信濃乗鞍，白馬，越中真川，陸中岩手山，低地で磐城の松川浦産のものがある。ランギフオルム酸もプソイドノルランギフオルム酸も含まない PD- の *Cl. mitis* 標本の数は前二者を遙に凌駕して居るが，本土では摂津の六甲山を南限して四国では剣山産の一標本があり山陰，山陽及九州の標本は未知である。

§136. **Usnea pseudintumescens** Asahina, Lich. of Japan, **3**: 83 (1956).

Thallus prostrate or suberect, rather stout, up to 10 cm long, dull pale green in the living state, afterwards becoming grayish straw colored. Primary base ±1.0 mm thick, pale brownish; principal stem immediately above the base influated, up to ±2.0 mm thick, glabrous, frequently sympodially branched and forming a luxuriant tuft. Primary branches up to 1.5 mm thick, attenuated toward the base, infrequently articulated, terete or somewhat deformed and scrobiculate, divided dichotomously and sympodially below, abruptly attenuated and more frequently branched at the apices, showing no conspicuous summit (deliquescent). All branches are loosely dispersed with 1–5 mm long fibrils, epapillose but verruculose, verruculae afterwards becoming soralia, simple and punctiform or arranged in irregular linear marks. Soredia isidioid. Apothecia unknown. Cortex rather soft, 40–70 μ thick, inner side lacerate, medulla 200–450 μ thick, its hyphae immediately infra cortex turgescent, 6–10 μ wide; axis more or less depressed, 200–300 μ thick, A. Q. ±20% at the most inflated portion.

The PD reaction of the medulla is permanent bright yellow, while K is negative.

The anticipated psoromic acid test by the usual microchemical method was difficult, perhaps on account of the presence of some impurities. But by the paper partition chromatography the presence of psoromic acid was proved. Solvent : ethylacetate : pyridine : water=2 : 1 : 1, at 19.5°, 1° 25′.

	Rf
Aceton extract of the lichen	0.53
Psoromic acid (control)	0.53

Locality: Chino-machi, Prov. Shinano, Central Japan.

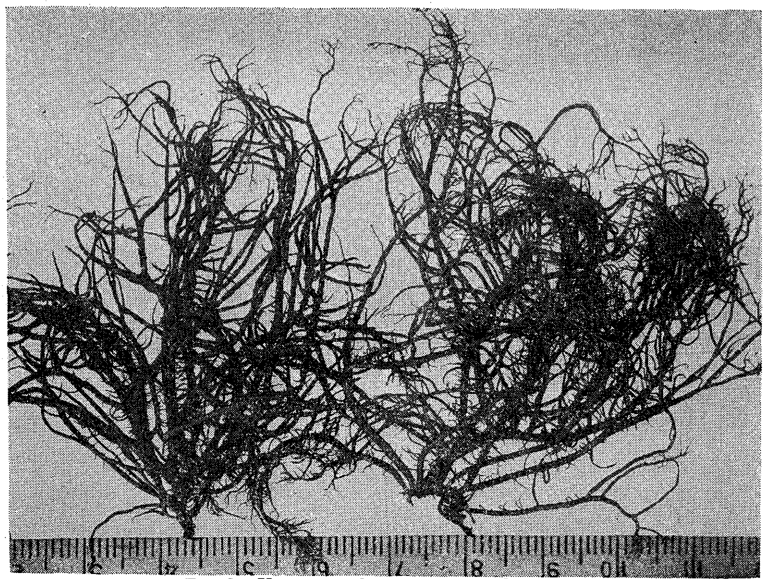


Fig. 3. *Usnea pseudintumescens* Asahina. ×1.

Among the lichen specimens recently collected by Mr. T. Matsuoka in Chino-machi, Prov. Shinano, I found several individuals of *Usnea pseudintumescens* Asahina. This species was established on the basis of a single specimen long time ago collected in northern Japan (Prov. Rikuzen) by G. Tōba. This type specimen is not a perfect lichen body but a fragment as it lacks primary base. So to make the identification more complete, I have measured the RS-value of a section of the newly found specimen and could, to my great satisfaction, confirm its total coincidence with the RS-value of the type specimen : a section of an inflated portion of a primary branch (diam. 1.34 mm) gave c : m : a=60 : 450 : 255 (μ), from which its RS value etc. may be calculated as

RS=1 : 7.5 : 4.2 and A.Q.=ca. 19% ; △AMC being its graph, with respect to the base line XY where $\theta=21°$

According to Asahina (l.c. p. 84) a section of the type specimen (diam. 1.32mm) gave c : m : a=82 : 430 : 270 (μ), from which its RS value etc. may be calculated as RS=1 : 7.5 : 4.2 and A.Q.=ca. 20.5% ;

△A′M′C′ being its graph with respect to the common base line XY, where $\theta=22°$

The inside of cortex in the transverse section showed incised outline and medullar hyphae immediately within the cortex are turgescent, on which also was emphasized by the description of the type.

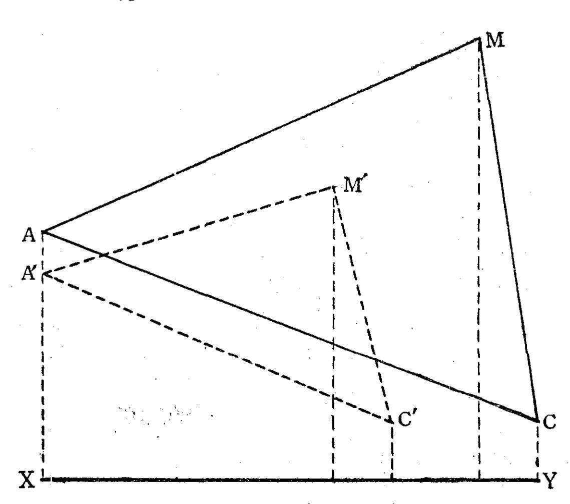


Fig. 4. △AMC is the graph of an RS of a specimen collected in Chino, Prov. Shinano. △A′M′C′ is the graph of an RS of the type specimen of *Usnea pseudintumescens* Asahina.

昭和 31 年夏 (1956) に出版した日本之地衣第 III 冊には *Usnea intumescens* Asahina の直ぐ後に之と外形が似て居る *Usnea pseudintumescens* Asahina と云ふものが記載されて居る。前者は材料も豊富で著者自身も屢々産地で親しく観察したもので其記載も充分にすることができたが後者は 1928 年に鳥羽源蔵氏が陸前気仙郡 (岩手県) 高田町附近で採集したタツタ一箇の而も不完全な箇体を基礎としたもので新種として発表するのは冒険の感が深かつた。処が最近松岡敏郎君が信州茅野在で採集した標本は正に此の *pseudintumescens* に充てるべきもので然も極めて発育の良い完全標本であるので之を使用して本種の記載を完全なものとした。但し此標本のアセトンエキスから普通のミクロ法でプソローム酸の結晶を得ることとは成効しなかつたがペーパークロマトグラフヒーで対照成分プソローム酸と全く一致するスポットを得て安心した。尚枝条の最も膨大せる部分の RS 及び其グラフを作た処タイプ品のそれ等に全く一致することを認め更に確証の信用度を高めた。